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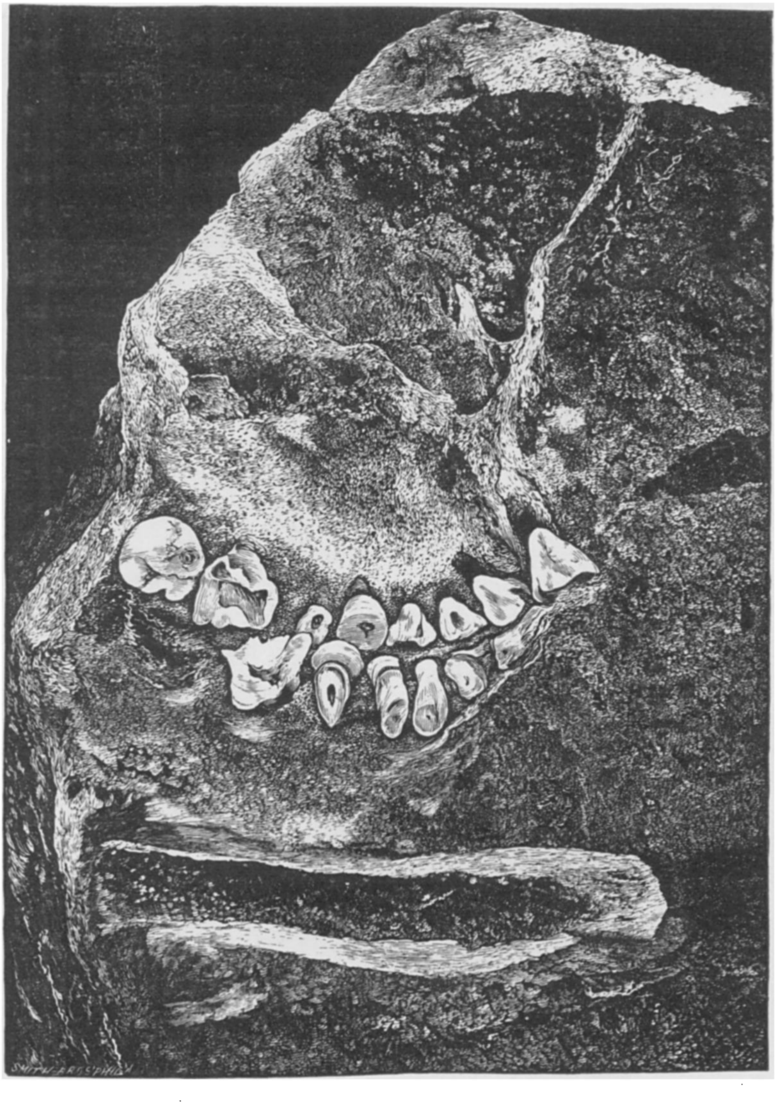
PLATE XXV.



Interior view of palate and both jaws of left side of the fossil man of Mexico.
From a photograph of the original by Cruces y Ca.

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NOTICE OF SOME HUMAN REMAINS FOUND NEAR THE CITY OF MEXICO.

BY MARIANO DE LA BARCENA.

IN the month of January, 1884, some excavations were being made, by means of dynamite, at the foot of the small hill known as "*Peñon de los Baños*," some four kilometers east of the City of Mexico. The excavations were made with the object of quarrying building stone for the Military Shooting School which is being constructed near the Peñon and under the supervision of Colonel Don Adolfo Obregon. This gentleman, at the beginning of January, was informed that among the rocks loosened by the dynamite some bones were to be found, and he accordingly collected and delivered them to the Minister of Public Works, Don Cárlos Pacheco, who appointed the writer to make a study of them. The preliminary examination being made, I presented them to the Mexican Society of Natural History, giving at the same time public notice of so important a discovery.

Some days afterwards I explored the formation in which the bones were found, continuing my studies with the coöperation of Don Antonio del Castillo, professor of geology, whom I invited to take part in my investigations; both making up a report which has lately been published in Mexico.

The human remains are firmly imbedded in a rock formed of silicified calcareous tufa, very hard and of a brownish-gray color. The cranium with the lower and upper maxillæ and fragments of the collar-bone, vertebræ, ribs and bones from the upper and lower limbs are exposed. The bones lie in disorder, proving that the rock in which the skeleton was found suffered an upheaval before consolidation, a circumstance which an examination of the ground further verifies. The bones present a yellowish appearance and the characteristic aspects of fossilization, it being noteworthy that they are not coated with layers of the calcareous rock as is observed in the recent deposits, but are firmly imbedded in the stone, which also fills the cells of the tissue.

Several distinct formations and rocks are seen in the locality where the bones were found; towards the center rises the small hill "*del Peñon*," consisting of volcanic porphyries; on the base to the north there appear first a clearly recent formation made up of vegetable earth, marl and ceramical remains, which in the upper part are modern, and in the lower belong to the Aztec ceramics. Under this recent formation are the calcareous layers in which the human remains were found.

These layers crop out with a rise toward the northern boundary, forming the end of an esplanade which surrounds the hill, and is three meters above the actual level of the waters of Lake Tezcoco. The layer of hardened rock does not extend with regularity the whole distance from the before-mentioned edge to the foot of the hill, some intervening spaces occurring in which this rock does not appear; the resulting hollows being filled with recent ground. This circumstance as well as the appearance of the layers of calcareous tufa, prove that this rock was upheaved after the deposit of the human bones, by the igneous rocks which crop out in the neighborhood of the hill forming dykes. This upheaval is also verified by the numerous smalls veins which are found in different directions on the ground.

In order to clearly establish the age which the deposit of the human bones might have, the best scientific method would be to find some animal fossil remains in the same formation which would distinctly mark the age of the layers of that calcareous rock, but until now, notwithstanding the many searches made, it has not yet been possible to find any traces of extinct animals; neither has there been found any vestige of ceramics or other remains that might indicate that these rocks were clearly modern, as among them the only things found were the human bones, roots converted into menilite and some small indeterminable lacustrine shells formed by the same calcareous substance. These shells belong to genera which have lived in Quaternary as well as present waters, it having been impossible to determine their species on account of the bad state of preservation in which they were found.

In the region to the south of the hill more modern calcareous rocks are seen, and thicker deposits of recent ground with remains of Aztec ceramics.

Not being therefore able to utilize the palæontological data for determining the age of these calcareous layers, we must fall back on the inspection of the ground.

Two facts seem at once to reveal that even supposing the formation to belong to the present age, it must be of remote antiquity. These facts are: The elevation of the ground above the actual level of the Lake of Tezcoco, and the remarkable hardness of the rock in which the bones are found, different from the other calcareous rocks that contain remains of ceramics or roots of plants clearly modern. The upheaval of the lacustrine layers which contain the human remains might have taken place through the diminution and retirement of the waters of the lake, or by the upheaval of volcanic rocks.

In the first case it could have been occasioned either by a violent filtration of the water, or a slow evaporation; but nowhere in the valley of Mexico are any traces to be found of a crack or opening through which the waters could have escaped, and which ought to appear outside of the present level of the lake, as if it were below, all the water would have disappeared. If the lowering of level was due to evaporation, a theory which would be more admissible, because from the time of the conquest of Mexico to the present the submerged surfaces have notably diminished, the time necessary to have elapsed in order that the level of the lake might fall three meters to its present one, must have been very long. What is most probable is, that the upheaval is due to volcanic action; for although until now no basalt has been discovered immediately underneath the place occupied by the hardened layers, yet dikes of that rock are to be seen in different directions at the foot of the hill, and even the volcanic masses which constitute it are found upheaved and inclined, demonstrating the succession of geological phenomena in that vicinity.

Let us now trace the origin of the silicified calcareous rock in which the bones were found, and which is different from the majority of the lacustrine rocks which occupy the valley of Mexico, these latter being, for the most part, thick and extensive layers of pumice, tufas, marls, volcanic ashes, clays and alluvions.

In order to proceed with more certainty in this investigation, I compared the calcareous rock in question with those which resembled it most from other parts of Mexico, and found it could only be considered similar to those which are clearly of a hydrothermal origin.

The hot-water spring which exists in the eastern part of the hill del Peñon forms sediments somewhat similar to the silicified calcareous tufa; but these are on a small scale and their formation is so slow as to preclude the belief that this spring could have filled all the immediate surroundings of the hill with deposits of such magnitude. What is most probable is, that in remote times there were great emissions of mineral thermal waters through different fissures, and in several directions, whose appearance was simultaneous with the basaltic masses that form dikes at the foot of the hill, as in the faces of the rocks sedimentations similar to the referred ones are perceived, there being furthermore many small veins which cut through the basaltic masses and even the calcareous rock.

By this it is seen that a series of volcanic phenomena must have taken place in that spot, beginning before the human remains were deposited, and which further continued when the material which received them was but little consolidated.

The succession of these phenomena took place, without doubt, in the following way:

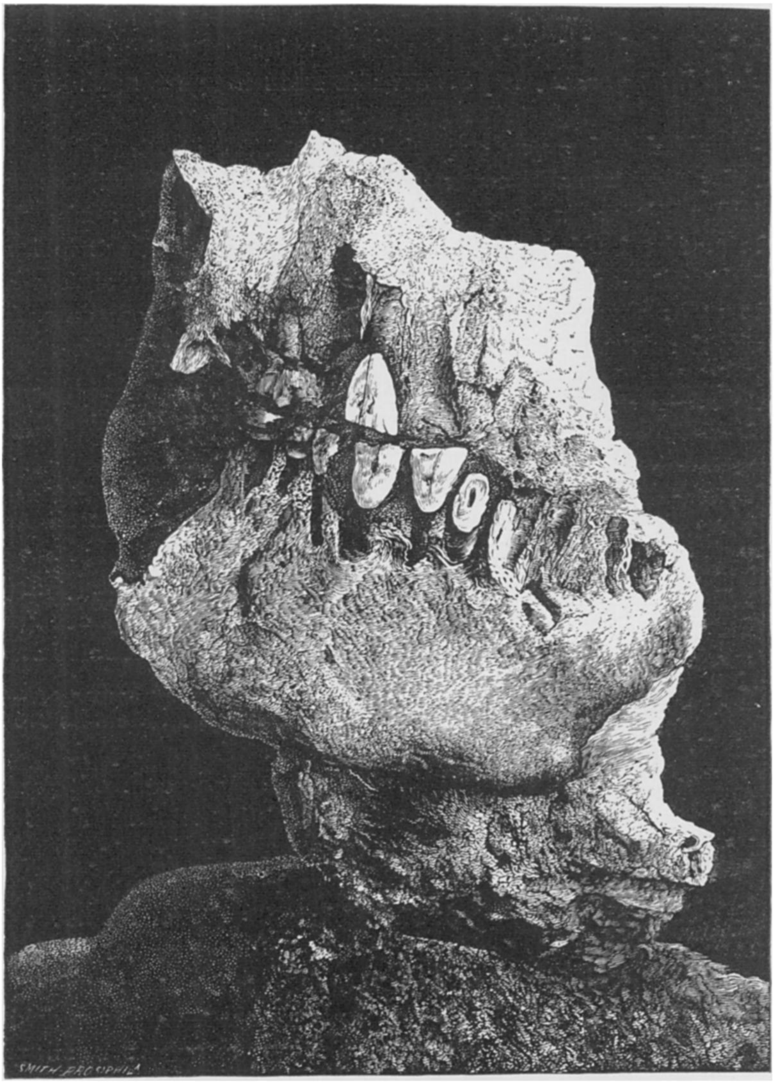
1st. Emission of thermal waters and appearance of basaltic rocks, upheaving the masses that formed the hill. These waters mixed with those of the lake which surrounded the hill and extended over a large area of the valley of Mexico; the calcareous deposits gradually accumulated around the hill, and being still soft the human corpse was deposited upon them.

2d. When the bones were already imbedded in the lacustrine deposit there came a new volcanic upheaval which raised this deposit, as the higher level which it now occupies proves, and the disorder in which the bones of the skeleton appear.

3d. In the gaps which were left after this upheaval, modern lacustrine deposits were formed, which increase even at the present time.

It is to be remarked that in other parts of the valley of Mex-

PLATE XXVI.



External view of left side and front of jaws of the fossil man ot Mexico. From a photograph of the original by Cruces y Ca.

ico in connection with the Lake of Tezcoco, isolated deposits of this silicified calcareous rock are seen, showing that the volcanic upheaval extended over a large surface, and that the thermal waters appeared several times. One of these deposits is to be found at the height of two meters above the present ground among rocks of the hill *del Tepeyac*, north of the City of Mexico.

The geological circumstances of the event once determined, and notwithstanding that the palæontological data are wanting that might mark with precision the relative age of that deposit, it is to be believed that it must be of remote antiquity, considering the circumstances which the mentioned rocks present, as well as the geological phenomena which have there taken place and of which no notice is given in the hieroglyphics or traditions of the ancient Mexicans.

This consideration alone is enough to believe that the man of the Peñon is prehistoric The odontological characteristics indicate that this man belonged to an unmixed race, the teeth being set with regularity and corresponding perfectly the upper with the lower. They present the peculiarity besides, that the canine teeth are not conical, but have the same shape as the incisors; a peculiarity which has been observed in other teeth found in very ancient graves of the Toltecs.

The size and shape of the bones of the limbs are those corresponding to a man of ordinary stature, and from the appearance of the teeth the man must have been about forty years old.

The greater part of the cranium having been destroyed, it was not possible to determine its diameters and thus classify it. The stratigraphical and lithological characteristics of the ground seem to indicate that the formation belongs to the upper Quaternary or at least to the base of the present geological age.

It may as well be remarked that at the foot of the steep slope of the Tepeyac hill, near the place where the calcareous sediments are to be seen among the rocks of the hill, as was previously mentioned, some excavations were made, and Professor Don Antonio del Castillo found various bones of Quaternary animals enveloped in a calcareous rock similar to that of the Peñon. The distance between this hill and the Tepeyac is nearly three miles.

The excavations continue at the foot of the hill del Peñon, with the object of quarrying building stone, and this will allow in the course of time some other data to be discovered which will clearly mark the geological age of the event; a tooth of a mastodon or an object of the present age would at once be the landmark assigning it a fixed page in the history of the earth. The authenticity of the fossil is not only determined by the report of Señor Obregon and the identity of the rock which contains the remains with the blocks that are being at present quarried at the foot of the hill, but I, myself, have determined this authenticity, having found part of the human remains still imbedded in the ground rock.

I will conclude by mentioning other facts that indicate the antiquity of man in the valley of Mexico. Twelve years ago, in executing some works for the drainage of the valley, in the direction of Tequisquiac, numerous deposits were discovered belonging to Quaternary animals, such as elephants, mastodons, glyptodons, etc., and among one of these deposits a fossil bone was found carved by human hand and imitating an animal's head. Unfortunately no care was taken to determine if it was found simultaneously with the bones of the Quaternary animals. The appearance of the carved bone and of the cuts and incisions which it has, denote a remarkable antiquity, and it has characteristics of fossilization. Two years ago I discovered some remains of ancient ceramics in the pumice tufa which is under the basaltic lava formation found in the south-eastern part of the valley of Mexico; the lava occupies a large area, and in some points its thickness is over two meters. No tradition makes any mention of this volcanic cataclysm before the existence of man in the valley of Mexico.

These are, at present, all the data I can give relative to the man del Peñon. On my return to Mexico I will continue with a further investigation of the ground where the discovery was made, and will communicate anything new that may be found, in order to determine the anthropological importance which these human remains may have.